

Appln No. 10/608,422  
Desai et al.  
Office Action dated June 14, 2005

This listing of claims will replace all prior versions and listing of claims in the application.

LISTING OF CLAIMS

1. (currently amended) A heat exchanger comprising:
  - a first end tank;
  - a second end tank opposite the first end tank;
  - a plurality of first tubes in fluid communication with the first and second end tanks, the plurality of first tubes adapted to have a first fluid flow therethrough;
  - a plurality of second tubes in fluid communication with the first and second end tanks, the plurality of second tubes adapted to have a second fluid, different from the first fluid, flow therethrough;
  - a plurality of fins disposed between the first and second tubes, with the first and second tubes and the fins being generally co-planar relative to each other;
  - an inlet and an outlet on the first end tank for the first fluid flow;
  - an inlet on the first end tank and an outlet on the second end tank for the second fluid flow; and

wherein at least one of the first fluid or second fluid is a radiator fluid.

2. (currently amended) A heat exchanger as in claim 1 wherein the first end tank and the second end tank each include at

Appln No. 10/608,422  
Desai et al.  
Office Action dated June 14, 2005

least one baffle having a peripheral portion and central portion, and wherein the peripheral portion is thicker than the central portion.

3. (original) A heat exchanger as in claim 1 wherein each of the plurality of first tubes includes a passageway and the passageway includes partitions, which divide the passageway such that the tube will perform a passive bypass function.

4. (original) A heat exchanger as in claim 3 wherein the partitions include fins.

5. (original) A heat exchanger as in claim 1 wherein at least one of the first tubes, second tubes or third tubes is of another size than one of the other tubes.

6. (original) A heat exchanger as in claim 1 wherein the first fluid is an oil.

7. (currently amended) A heat exchanger comprising:  
a first end tank;  
a second end tank opposite the first end tank;  
a plurality of first tubes in fluid communication with the first and second end tanks, the plurality of first tubes adapted to have a first fluid flow therethrough;  
a plurality of second tubes in fluid communication with the first and second end tanks, the plurality of second tubes adapted to have a second fluid, different from the first fluid, flow therethrough;  
a plurality of third tubes, smaller in size than the first and second tubes, in fluid communication with the the first and second end tanks,

Appln No. 10/608,422

Desai et al.

Office Action dated June 14, 2005

the plurality of third tubes adapted to have a third fluid, ~~different from~~  
the first or second fluid, flow therethrough;

a plurality of fins disposed between the first, second and third tubes, with the majority of fins being generally co-planar relative to each other;

an inlet and an outlet on the first end tank for the first fluid flow;

an inlet on the first end tank and an outlet on the second end tank for the second fluid flow; and

wherein ~~at least one of the first fluid, second fluid or~~ third fluid is a radiator fluid.

8. (original) A heat exchanger as in claim 7 wherein the first end tank and the second end tank each include at least one baffle.

9. (original) A heat exchanger as in claim 7 wherein each of the plurality of first tubes, second tubes or third tubes includes a passageway and the passageway includes partitions, which divide the passageway such that the tube will perform a passive bypass function.

10. (original) A heat exchanger as in claim 9 wherein the partitions include fins.

11. (original) A heat exchanger as in claim 7 wherein at least one of the first tubes, second tubes or third tubes is of another size than one of the other tubes.

12. (original) A heat exchanger as in claim 7 wherein the first fluid is an oil.

Appln No. 10/608,422

Desai et al.

Office Action dated June 14, 2005

13. (original) A heat exchanger as in claim 7, wherein the first or second fluid is an oil.

14. (currently amended) A heat exchanger comprising:

a first end tank;

a second end tank opposite the first end tank;

a plurality of first metal tubes in fluid communication with the first and second end tanks, and being adapted to have a first fluid flow there-through;

a plurality of second metal tubes in fluid communication with the first and second end tanks, and being adapted to have a second fluid, different from the first fluid, flow there-through;

a plurality of third metal tubes, smaller in size than the first and second metal tubes, in fluid communication with the first and second end tanks, and being adapted to have a third fluid, different from the first fluid or second fluid, flow there-through and

a plurality of fins disposed between any of the first, second or third tubes, with at least two of the first, second or third tubes and the fins being generally co-planar relative to each other;

wherein at least one of the first, second or third metal tubes includes an interior wall structure including a partition adapted for subdividing the tube into a plurality of passageways within the tube.

15. (original) A heat exchanger as in claim 14 wherein the first end tank and the second end tank each include at least one baffle.

16. (currently amended) A heat exchanger as in claim 14, having an inlet and an outlet on the first end tank for the first fluid flow and an inlet on the first end tank and an outlet on the second end tank for the second fluid flow, wherein at least one of the first tubes, second tubes or third tubes is of another size than one of the other tubes and

Appln No. 10/608,422

Desai et al.

Office Action dated June 14, 2005

wherein the third tubes are smaller in size than the at least one first and second tubes.

17. (original) A heat exchanger as in claim 14 wherein one or more of the passageways includes partitions, which divide the passageway such that the tube will perform a passive bypass function.

18. (original) A heat exchanger as in claim 14 wherein the partition includes at least one fin.

19. (currently amended) A heat exchanger for an automotive vehicle, comprising:

at least one end tank;

at least two heat exchangers including a plurality of spaced apart metal tubes with fins between the spaced tubes;

at least three baffles in the at least one end tank;

the heat exchangers being disposed so that their respective tubes and fins are generally co-planar with each other and are connected to the end tank;

at least two inlets or at least two outlets on the at least one end tank; and

the heat exchangers are being selected from the group consisting of an oil heat exchanger, a condenser, a radiator or combinations thereof.

20. (original) A heat exchanger as in claim 19 wherein the at least one of said heat exchangers is a radiator.

Appln No. 10/608,422

Desai et al.

Office Action dated June 14, 2005

21. (original) A heat exchanger system comprising a heat exchanger as in claim 1 and at least one other heat exchanger.

22. (original) A heat exchanger system comprising a heat exchanger as in claim 7 and at least one other heat exchanger.

23. (original) A heat exchanger system as in claim 21, wherein one heat exchanger is adapted to have a fluid selected from the group of radiator coolant and an automotive fluid and the other heat exchanger is adapted to have a fluid selected from the group of automotive fluids.

24. (original) A heat exchanger system as in claim 22, wherein one heat exchanger is adapted to have a fluid selected from the group of radiator coolant and an automotive fluid and the other heat exchanger is adapted to have a fluid selected from the group of automotive fluids.

25. (original) A heat exchanger system as in claim 21, wherein the heat exchangers are arranged in parallel.

26. (original) A heat exchanger system as in claim 22, wherein the heat exchangers are arranged in parallel.

27. (original) A heat exchanger system as in claim 21, wherein the heat exchangers are arranged side by side.

28. (original) A heat exchanger system as in claim 22, wherein the heat exchangers are arranged side by side.

Appln No. 10/608,422

Desai et al.

Office Action dated June 14, 2005

29. (original) A heat exchanger as in claim 1, wherein the fluid flow direction is vertical or down flow from top to bottom or bottom to top.

30. (original) A heat exchanger as in claim 7, wherein the fluid flow direction is vertical or down flow from top to bottom or bottom to top.